

WHAT IS CLAIMED IS:

1. An image display apparatus comprising:  
space modulation means for modulating incident  
light and outputting the modulated incidence light;  
5                   illumination means for generating a plurality of  
light beams having different colors, time sequentially  
switching the generated light beams and illuminating  
said space modulation means with the light beam; and  
projection means for projecting light emitted from  
10                said space modulation means upon an image display  
screen,

wherein a white light illumination period is  
provided for said illumination means per each interval  
between illumination periods for the plurality of light  
15                beams having different colors.

2. An image display apparatus according to claim  
1, wherein during the white light illumination period  
provided for the plurality of light beams having  
20                different colors, a white luminance emphasizing process  
is dispersively performed.

3. An image display apparatus according to claim  
1 or 2, wherein synchronously with the white light  
25                illumination period provided for the plurality of light  
beams having difference color, a period of a white  
luminance emphasizing signal applied to said space

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modulation means is set longer than the white light illumination period and overlapped with a color light illumination period.

5        4. An image display apparatus comprising:  
space modulation means for modulating incident  
light and emitting the modulated incidence light;  
illumination means for generating a plurality of  
light beams having different colors, time sequentially  
10      switching the generated light beams and illuminating  
said space modulation means with the light beam; and  
projection means for projecting light emitted from  
said space modulation means upon an image display  
screen,  
15      wherein said illumination means has a white light  
illumination period having a length corresponding to an  
illumination light transition period provided per each  
interval between illumination periods for the plurality  
of light beams having different colors, and said space  
20      modulation means repeats modulation twice during a  
signal period overlapping the white light illumination  
period, by using a same modulated signal for a white  
light gradation display having a length corresponding  
to an illumination light transition period to thereby  
25      set the signal period having a length twice the  
illumination light transition period.

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5. An image display apparatus comprising:  
space modulation means for modulating incident  
light and emitting the modulated incidence light;  
illumination means for generating light beams of  
5 three primary colors of red (R), green (G) and blue  
(B), time sequentially switching the generated light  
beams and illuminating said space modulation means with  
the light beam; and  
projection means for projecting light emitted from  
10 said space modulation means upon an image display  
screen,  
wherein said illumination means has a plurality of  
groups each having at least each of three boundary  
period between red and green, green and blue, and blue  
15 and red, respectively of illumination periods of the  
three primary colors, of the plurality of groups, at  
least one group is supplied with a signal different  
from signals supplied to other groups, and a same group  
is applied with a same signal during each of the three  
20 boundary period between red and green, green and blue,  
and blue and red.

6. An image display apparatus comprising:  
space modulation means for modulating incident  
light and emitting the modulated incidence light;  
illumination means for generating light beams of  
25 three primary colors of red (R), green (G) and blue

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(B), time sequentially switching the generated light beams and illuminating said space modulation means with the light beam; and

5 projection means for projecting light emitted from said space modulation means upon an image display screen,

wherein said illumination means has a plurality of groups each having at least each of three boundary period between red and green, green and blue, and blue 10 and red, respectively of illumination periods of the three primary colors, and the plurality of groups includes a first group having a white light illumination period having a length corresponding to an illumination light transition period during each 15 boundary period and a second group without the white light illumination period during each boundary period.

7. An image display apparatus according to claim 6, wherein for the first group, a same modulated signal 20 for a white light gradation display having a length corresponding to the illumination light transition period is applied twice to set the signal period having a length twice the illumination light transition period, the signal period overlapping the white light 25 illumination period, a same signal being applied to a same group during each of the three boundary periods between red and green, green and blue, and blue and

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red, and for the second group, a modulated signal for the white light gradation display having a length corresponding to the illumination light transition period is applied once, a signal period overlapping the 5 white light illumination period, and a same signal being applied to a same group during each of the three boundary periods between red and green, green and blue, and blue and red.

10        8. An image display apparatus according to claim 4, 6 or 7, wherein the illumination light transition period of said illumination means is a period while a light spot on a rotary color filter plate traverses a boundary of the color filter plate.

15        9. An image display apparatus according to claim 4, 6 or 7, wherein the illumination light transition period of said illumination means is a response period of a color filter such as liquid crystal.

20        10. An image display apparatus according to claim 4, 6 or 7, wherein the illumination light transition period of said illumination means is a switching period between light emission sources such as LED.

25        11. An image display apparatus according to any one of claims 1, 4, 5 and 6, wherein said space

modulation means is a space modulation unit for performing time divisional modulation.

12. An image display apparatus according to any  
5 one of claims 1, 4, 5 and 6, wherein said space  
modulation means is a space modulation unit using  
liquid crystal.

13. An image display apparatus according to any  
10 one of claims 1, 4, 5 and 6, wherein said space  
modulation means is a space modulation unit of a MEMS  
type.

14. An image display apparatus according to any  
15 one of claims 1, 4, 5 and 6, wherein said space  
modulation means is a space modulation unit disposed  
with micro mirrors.

15. An image display apparatus according to any  
20 one of claims 1, 4, 5 and 6, wherein said illumination  
means generates color field sequential illumination  
light by using a rotary color filter divided into a  
plurality of areas having different transmission  
wavelength bands.

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16. An image display apparatus according to claim  
8, wherein said illumination means generates color

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field sequential illumination light by using a rotary color filter divided into a plurality of areas having different transmission wavelength bands.

5        17. An image display apparatus according to any one of claims 1, 4, 5 and 6, wherein said illumination means generates color field sequential illumination light by switching between a plurality of liquid crystal filters having different transmission  
10        wavelength bands.

15        18. An image display apparatus according to claim 9, wherein said illumination means generates color field sequential illumination light by switching between a plurality of liquid crystal filters having different transmission wavelength bands.

20        19. An image display apparatus according to any one of claims 1, 4, 5 and 6, wherein said illumination means generates color field sequential illumination light by switching between light sources such as LED.

25        20. An image display apparatus according to claim 10, wherein said illumination means generates color field sequential illumination light by switching between light sources such as LED.

21. An image display method of generating a plurality of light beams having different colors, time sequentially switching the generated light beams, illuminating a space modulation means with the light beam, and projecting light modulated by and output from the space modulation means upon an image display screen,

wherein a white light illumination period is provided in each period between illumination periods for the plurality of light beams having different colors.

22. An image display method according to claim  
21, wherein during the white light illumination period  
15 provided for the plurality of light beams having  
different colors, a white luminance emphasizing process  
is dispersively performed.

23. An image display method according to claim 21  
20 or 22, wherein synchronously with the white light  
illumination period provided for the plurality of light  
beams having difference color, a period of a white  
luminance emphasizing signal applied to the space  
modulation means is set longer than the white light  
25 illumination period and overlapped with a color light  
illumination period.

24. An image display method of generating a plurality of light beams having different colors, time sequentially switching the generated light beams, illuminating a space modulation means with the light 5 beam, and projecting light modulated by and output from the space modulation means upon an image display screen,

wherein a white light illumination period having a length corresponding to an illumination light 10 transition period is provided in each period between illumination periods for the plurality of light beams having different colors, and an operation of the space modulation means overlaps the white light illumination period by applying a modulated signal for a white light 15 gradation display having a length corresponding to the illumination light transition period.

25. An image display method of generating a plurality of light beams of three primary colors, time 20 sequentially switching the generated light beams, illuminating a space modulation means with the light beam, and projecting light modulated by and output from the space modulation means upon an image display screen,

25 wherein of a plurality of groups each having at least each of three boundary period between red and green, green and blue, and blue and red, respectively

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of illumination periods of the three primary colors, of  
the plurality of groups, at least one group is supplied  
with a signal different from signals supplied to other  
groups, and a same group is applied with a same signal  
5 during each of the three boundary period between red  
and green, green and blue, and blue and red.

26. An image display method of generating a  
plurality of light beams of three primary colors, time  
10 sequentially switching the generated light beams,  
illuminating a space modulation means with the light  
beam, and projecting light modulated by and output from  
the space modulation means upon an image display  
screen,

15 wherein a plurality of groups each having at least  
each of three boundary period between red and green,  
green and blue, and blue and red, respectively of  
illumination periods of the three primary colors,  
include a first group having a white light illumination  
20 period having a length corresponding to an illumination  
light transition period during each boundary period and  
a second group without the white light illumination  
period during each boundary period.

25 27. An image display method according to claim  
26, wherein for the first group, a same modulated  
signal for a white light gradation display having a

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length corresponding to the illumination light transition period is applied twice to set the signal period having a length twice the illumination light transition period, the signal period overlapping the 5 white light illumination period, a same signal being applied to a same group during each of the three boundary periods between red and green, green and blue, and blue and red, and for the second group, a modulated signal for the white light gradation display having a 10 length corresponding to the illumination light transition period is applied once, a signal period overlapping the white light illumination period, and a same signal being applied to a same group during each of the three boundary periods between red and green, 15 green and blue, and blue and red.

28. A storage medium storing a program for allowing a computer to realize a function of each means of the image display apparatus recited in any one of 20 claims 1, 2, 4 to 7.

29. A storage medium storing a program for allowing a computer to realize the image display method recited in any one of claims 21, 22, 24 to 27.

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30. A program for allowing a computer to realize a function of each means of the image display apparatus

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recited in any one of claims 1, 2, 4 to 7.

31. A program for allowing a computer to realize  
the image display method recited in any one of claims  
5 21, 22, 24 to 27.

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